



## **Summary of Fishery Surveys Bucks Lake, Rusk County, 2014**

WDNR's Fisheries Management Team from Park Falls completed a fyke netting survey in 2014 to assess the fish community in Bucks Lake. Fyke nets set shortly after ice-out targeted early-spawning gamefish species to determine whether Bucks Lake should continue to be managed for its fishery following repeated indications of oxygen depletion in winter, often referred to as "winter-kill" conditions. Early in winter over several years, Aeration Technicians recorded extremely low dissolved oxygen concentrations, observed dead frogs in the outlet, and detected the smell of rotten eggs (hydrogen sulfide). Quality, preferred, and memorable sizes referenced in this summary are based on standard proportions of world record lengths developed for each species by the American Fisheries Society. "Keeper size" is based on known angler behavior.

### **Habitat Characteristics**

Bucks Lake is a shallow, 83-acre impoundment of Hemlock Creek located in the Blue Hills region of Rusk County about 7½ miles southeast of Birchwood, WI. It has a maximum depth of 18 feet and an average depth of 3 feet. The water is moderately clear (Secchi depth = 6 feet), and the substrate is 5% gravel and 95% muck with many submerged stumps and logs. The shoreland vegetation is made up of 65% hardwoods and the remainder is marsh wetland. Bucks Lake lies entirely within the Rusk County Forest. The Rusk County Forestry Department maintains a boat landing and dam at the south end of the lake.

### **Survey Results**

We set three fyke nets on May 12<sup>th</sup>, 2014 and fished them only one night (three net-nights of netting effort) after documenting the obvious effects of winter-kill on the fish community. Water temperature decreased from 63°F in mid-afternoon to 57°F in mid-morning. Our fyke nets captured only species that can tolerate or avoid extremely low dissolved oxygen concentrations. Each net captured thousands of small yellow bullheads and black bullhead 5 – 6 inches long. We grossly estimated the total weight of bullheads was 1,200 – 1,600 pounds.

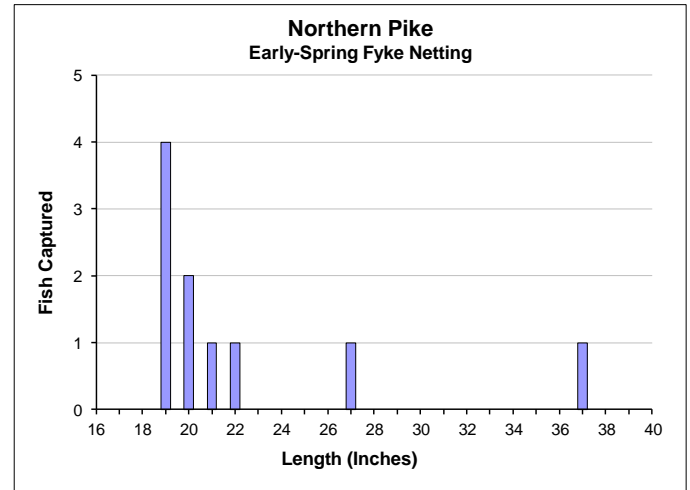
Catch statistics derived from this survey are approximate because we may not have counted or measured all species and individuals mixed with the bullheads as we emptied the nets. We also captured a few yellow perch as well as two mud minnows, three pumpkinseeds, and one golden shiner.

## Northern Pike



### Early Spring Fyke Nets

Captured 3.3 per net-night $\geq 14"$	
Quality Size $\geq 21"$	40%
Preferred Size $\geq 28"$	10%
Memorable Size $\geq 34"$	10%



Though our catch was almost exclusively bullheads, a few northern pike in very poor condition were also measured while emptying the nets. Their fin rays were separated from one another, resembling fingers with no tissue between the rays. Their gills filaments were thin and light pink in color, compared to the red and robust gill condition of healthy fish. These lucky survivors probably moved upstream into Hemlock Creek and its tributaries to seek refuge from depleted oxygen in the impoundment.

A 2007 dam renovation raised the lake level about 1½ foot above its historic elevation, flooding more of the surrounding wetlands. We suspect that the additional decaying vegetation increased the biological demand for oxygen. After the lake freezes and oxygen uptake from the atmosphere stops, aerobic decomposition beneath the ice quickly consumes all dissolved oxygen, usually before January 1. Maintaining a winter lake elevation at or below the historical level could dewater the organic material that was flooded in 2007 and in turn, reduce biological oxygen demand so that winter dissolved oxygen might remain above lethal levels. However, this adaptive treatment, initiated in fall 2014, does not seem to offer much promise for supporting a sport fishery in Bucks Lake. On January 8, 2015 our Aeration Technician again recorded dissolved oxygen concentrations less than 0.5 milligrams per liter at all depths and noted the sulfide odor when he drilled a hole through the ice near the dam.

Because our oxygen monitoring and netting survey confirm that Bucks Lake experiences chronic winter-kill, we recommend that Bucks Lake should be removed from our Fishery Team's baseline lakes monitoring schedule and no longer managed as a fishery, unless subsequent spot-check monitoring shows significant improvement in winter oxygen levels.

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LAKE SURVEY MAP

SEC. 26 T. 36 N. R. 9 W.

Map of Lake Umbagog, Maine, showing land ownership by Rusk Co. and various geographical features. The map includes a north arrow, a scale bar (0 to 2000 feet), and a legend for topographic symbols, lake bottom symbols, and species of fish. A small inset map shows the lake's location relative to the surrounding area.

**TOPOGRAPHIC SYMBOLS**

- Brush
- Partially wooded
- Wooded
- Cleared
- Pastured
- Agricultural
- Dwelling
- Resort

**LAKE BOTTOM SYMBOLS**

- P. Peat
- Mk. Muck
- C. Clay
- Sd. Sand
- St. Silt
- Gr. Gravel
- R. Rubble
- Br. Bedrock
- T. Submerged vegetation
- J. Emergent vegetation
- F. Floating vegetation
- Stumps & Snags

**SPECIES OF FISH**

Species	Abundant	Common	Present
Muskie			
N. Pike			X
Walleye			
L. M. Bass			X
S. M. Bass			
Panfish			X
Trout			

**AREA** 82.6 ACRES  
**UNDER 3 FT.** 67.67 %  
**OVER 20 FT.** 0 %  
**VOLUME** 221.0 ACRE FT.  
**TOTAL ALK.** 30 P.P.M.  
**SHORELINE** 4.0 MILES  
**MAX. DEPTH** 18 FEET

Field work by J. Miller, L. Sather. Drawn by C. Holt.